WHAT IS CLAIMED IS:

1. A cleaning method of a heat treatment apparatus for feeding cleaning gas in a treatment vessel and removing an unnecessary film in said treatment vessel, comprising the steps of:

preheating said cleaning gas outside said treatment vessel and

feeding said preheated cleaning gas into said treatment vessel and heating and keeping said treatment vessel internally at a predetermined temperature.

2. The cleaning method of a heat treatment apparatus according to Claim 1, wherein

said treatment vessel is heated and kept at said predetermined temperature in a state that a holding tool of an object to be processed is contained in said treatment vessel.

3. The cleaning method of a heat treatment apparatus according to Claim 1, wherein

said cleaning gas is preheated up to an activation capability temperature of said cleaning gas at said preheating step.

4. The cleaning method of a heat treatment apparatus according to Claim 1, wherein

said cleaning gas is preheated up to a heat decomposition temperature of said cleaning gas at said preheating step.

5. The cleaning method of a heat treatment apparatus according to Claim 3, wherein

said cleaning gas includes ClF_3 and is preheated up to an activation capability temperature of ClF_3 in a range of 200 to 400°C at said preheating step.

6. The cleaning method of a heat treatment apparatus according to Claim 4, wherein

said cleaning gas includes ClF_3 and is preheated up to a heat decomposition temperature of ClF_3 in a range of 300 to 1000°C at said preheating step.

7. The cleaning method of a heat treatment apparatus according to Claim 1, wherein

said unnecessary film in said treatment vessel is a same kind of film as a film formed on a surface of an object to be

processed in said treatment vessel.

8. The cleaning method for a heat treatment apparatus according to Claim 1, wherein

the treatment vessel is made of quartz or SiC.

9. A cleaning method of a heat treatment apparatus for feeding cleaning gas in a treatment vessel containing an object to be processed and removing a pollutant on said object to be processed in said treatment vessel, comprising the steps of:

preheating said cleaning gas up to an activation capability temperature of said cleaning gas outside said treatment vessel and

feeding said preheated cleaning gas into said treatment vessel and heating and keeping said treatment vessel internally at a predetermined temperature.

10. The cleaning method of a heat treatment apparatus according to Claim 9, wherein

said cleaning gas includes a hydrochloric acid, and is heated up to an activation capability temperature of said hydrochloric acid of at least 800°C, and

said treatment vessel is heated and kept internally at 700°C to 1000°C.

11. The cleaning method of a heat treatment apparatus according to Claim 9, wherein

said pollutant on said object to be processed is at least one of iron, copper, aluminum, and tungsten.

12. A heat treatment apparatus comprising:

a treatment vessel having a holding tool for an object to be processed,

a treatment vessel heater arranged outside said treatment vessel for heating said treatment vessel,

cleaning gas feed means for feeding cleaning gas into said treatment vessel, and

a cleaning gas heater connected to said cleaning gas feed means for preheating said cleaning gas outside said treatment vessel,

wherein said cleaning gas heater and said treatment vessel heater are controlled by control means.

13. The heat treatment apparatus according to Claim 12, wherein

said object to be processed is held by said holding tool, and

said cleaning gas is preheated by said cleaning gas heater up to an activation capability temperature so that a pollutant on said object to be processed is removed.

14. The heat treatment apparatus according to Claim 13, wherein

said cleaning gas includes a hydrochloric acid, and

said control means controls said cleaning gas heater so as to heat said cleaning gas up to said activation capability temperature of at least 800°C, and controls said treatment vessel heater so as to heat said treatment vessel to 700°C to 1000°C.

15. The heat treatment apparatus according to Claim 13, wherein

said pollutant on said object to be processed is at least one of iron, copper, aluminum, and tungsten.

16. The heat treatment apparatus according to Claim 13, wherein

said treating device is composed of an inner tube for containing said object to be processed and an outer tube having a ceiling covering said inner tube, and

cleaning feed means is interconnected into said inner tube.

17. The heat treatment apparatus according to Claim 12, wherein

on a downstream side of said cleaning gas heater, an orifice is installed to give a flow path resistance to said cleaning gas.